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tween different velocities of rotation in these instruments and the corresponding effects : first, with regard to the deflection of a magnetic galvanometer ; secondly, with regard to chemical decompositions ; thirdly, with regard to the production of sparks ; and lastly, with regard to the intensity of the shock communicated to the human body. He compares the effects produced by the magnetic electrical battery, first, when the coil consisted of one continuous length of wire ; secondly, when the coil was doubled upon itself so as to constitute two sets of conductors of half the length of the former ; thirdly, when, upon being again doubled, it composed four conductors of one quarter of the length of the first ; and lastly, when, on being doubled a third time, the electric current was made to pass through eight wires, each one eighth of the original length of the single wire. It was found that by thus multiplying the channels of conduction, although both the magnetic and the luminous effects continue to be produced with scarcely any sensible difference of intensity, the power of effecting chemical decompositions becomes more and more impaired, and the physiological influence is weakened in a still more remarkable degree. In the four-stranded coil, indeed, no shock whatever could be produced, however rapidly the instrument was made to revolve. The author endeavours to account for these variations of effect by the diminution of velocity in the electric current, its quantity remaining unaltered, consequent on its division into several streams by the multiplied channels offered to its progress. He also tried the effects of conjoining the magnetic electrical machine with ordinary voltaic combinations ; sometimes acting in cooperation, and at other times in opposition to one another ; and notices the corresponding results, which were sufficiently accordant with theory.

17. "Welt Mechanik." By M. Kropalschek.

The object which the author has in view, in this paper, is to overturn the theory of universal gravitation, as regulating the planetary motions. The memoir is divided into two parts ; in the first, he disputes the accuracy of Kepler's law respecting the description of equal areas in equal times, and endeavours to confute the fundamental doctrines of astronomy relating to the elliptical orbit of the earth, the difference between solar and mean time, and the whole theory of the motions of the moon and the planets. In the second part, the author enters into a detailed exposition of his own views of the mechanism of the heavens ; and devotes 215 closely written pages to the development of a perfectly new hypothesis, which he advances, founded on a supposed variation of the progressive motion of the planets, in an orbit perfectly circular, and by which he thinks he can explain all the phenomena they present to observation.

18. "Plan et Esai d'un nouveau Catalogue Sidéral, avec une représentation graphique, et une loi de simple et régulière distribution des étoiles autour du Pole, qui pourra fournir plusieurs avantages à

l'Astronomie pratique." By Professor Joseph Bianchi, Superintendent of the Observatory at Modena.

The Author proposes the construction of a new sidereal catalogue, accompanied with a graphic representation of all the stars visible within the field of view at each observation, by means of the meridian transit of the most conspicuous stars across the field of a telescope of four inches aperture, attached to a three-feet circle. He directs this telescope to any elevation of the heavens that happens to be clear; and bringing any conspicuous star to the horizontal wire, he watches its transit over the two first vertical threads; then, suddenly intercepting the light, makes a diagram of all the stars in the field down to the 12th magnitude; and this he performs with sufficient expedition to enable him, on restoring the light, to observe the transit of his principal star over the fourth and fifth threads. The author has appended to the description of his method explanatory drawings, displaying 600 fields, of which the principal star in each, has its right ascension and declination determined. He subjoins some remarks on the rate of clocks, as influencing the observations on the upper, lower, and opposite passages; and proposes a plan for a system of symbols expressive of the relative magnitude of the stars recorded in his catalogue.

The author further states as one of the most important results of his researches the probable existence of a general and curious law of position in the stars, namely, that they are distributed in pairs; each star having a corresponding one in the opposite meridian, very nearly of the same declination and magnitude; a coincidence which he considers as extremely favourable to the execution of his project for the accurate determination of the position in the heavens of every star.

19. "On the Composition and Decomposition of Mineral Waters." By the Rev. George Cooke, LL.B. Communicated by J. G. Children, Esq., Sec. R.S.

20. "Inquiries concerning the Elementary Laws of Electricity," Part II. By William Snow Harris, Esq., F.R.S.

21. "A New Theory of the Constitution and Mode of Propagation of Waves on the Surface of Fluids." By H. J. Dyar, Esq. Communicated by Edward Turner, M.D., F.R.S.

The Society adjourned over the long vacation, to meet again on the 17th November next.